UNITED STATES PATENT AND TRADEMARK OFFICE

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10/583,648	06/20/2006	Peng Guo	42P21473	3749

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INTEL/BSTZ
BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER
WEI, ZHENG

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 July 2010</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1 and 3-29</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1 and 3-29</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>07/27/2010</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Remarks

1.   This office action is in response to the amendment filed on 07/27/2010.

2.   Claims 2 and 30 have been canceled.

3.   Claims 1 and 3-29 have been amended.

4.   The 35 U.S.C. 101 rejection to claims 14-30 is withdrawn in view of the

Applicant's amendment.

5.   Claims 1 and 3-29 remain pending and have been examined.

Information Disclosure Statement

6.   The information disclosure statements filed on 07/27/2010 has been placed in

the application file and the information referred to therein has already been

considered.

Response to Arguments

7.   Applicant's arguments filed on 07/27/2010, in particular on pages 8-9, have been

fully considered but they are not persuasive. For example:

- At page 9, first paragraph, Applicant submits that prior art Wu fails to teach

  finding out a hotspot in the first type checking and performing a second type

  checking to assert an indicator in an object header of the object to indicate a

  success of the second type checking at the hotspot. However, Examiner

  respectfully disagrees. As Wu disclosed (paragraph [0033]), the processor 12

first determines if the header of an object being type tested has been encoded.

The location where the header of the object being encode, e.g., the encoded

block (3000) is a hotspot to encode with object type information (see for

example, paragraph [0033]) and such encoded object type information can be

further processed/checked to indicate a success of object type checking (see

for example, paragraph [0036]).

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1 and 3-29 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Wu (Wu et al., US.2004/0103391 A1)

Claim 1:

Wu discloses a method comprising

- Performing a first type checking on an object to find out a encoded object type

  information in the first type checking (see for example, Fig.6, step 300,

  checking "Header Encoded w/Object Type" and related text), and

- Performing a second type checking between a class of the object and a target

  class specified by the encoded type information to assert an indicator in an

object header of the object to indicate a success of the second type checking

at the hotspot (logically ANDing the type mask in the header) between a class

of the object (object being tested) and a target class (target type) specified by

a hotspot in the first time type checking (see for example, Fig.6, step 304,

"Logically AND Type Mask w/Header" and related text),

but does not explicitly disclose find out a hotspot location of the encoded object

type information. However, Wu discloses a method to determinate if the type

information is encoded in object header or not by comparing the hashcode

portion of the object being type tested to a value or encoded condition associated

with an undefined condition (see for example, paragraph [0033]). Therefore, it

would have been obvious to one having ordinary skill in the art at the time the

invention was made to understand that location of determined encoded type

information in the object header is the hotspot and such hotspot/encoded data

specifying object type information as addressed by Wu (see for example,

paragraph [0033])

Claim 3:

Wu discloses the method of claim 1 further comprising

- deasserting the indicator to indicate a failure of the second type checking

  between the object class and the target class (see for example, Fig.6, step

  306, "Result=0?" -> Yes ->step 308, "Call Type Test Failure Routine" and

  related text; also see paragraph [0036], "If the processor 12 determines that

the result of the logical ANDing is equal to zero (i.e., the object being type

tested is not of the target type...")

Claim 4:

Wu discloses the method of claim 1 further comprising

- skipping a third time type checking between the object class and the target

  class, in response to determining that the object header comprises an

  indicator that is asserted to indicate a first time type checking success (see

  for example, Fig.6, step 306, "Result=0?" -> No ->step 310, "Return to Calling

  Routine" and related text; also see paragraph [0036], "On the other hand, if

  the processor 12 determines that the result of the logical ANDing is not equal

  to zero (i.e., that the object being type tested is of the target type or is

  compatible with the target type..."; also see Fig.2, step 100, "Object Type

  =Target Type?" ->Yes -> step 102, "Return True to Calling Routine" (skipping

  a second time type checking in step 104))

Claim 5:

Wu discloses the method of claim 1 further comprising

- skipping a third type checking between the object class and the target class,

  in response to determining that the indicator of the object header is

  deasserted to indicate a failure of the second type checking (see for example,

  Fig.6, step 306, "Result=0?" -> No ->step 310, "Return to Calling Routine"

and related text; also see paragraph [0036], "On the other hand, if the

processor 12 determines that the result of the logical ANDing is not equal to

zero (i.e., that the object being type tested is of the target type or is

compatible with the target type...").

Claim 6:

Wu discloses the method of claim 1 further comprising

- detecting the hotspot in the first type checking by dynamic profiling (see for

  example, paragraph [0030], "...the plurality of bit fields 202 defined in the

  header 200 correspond to frequently or commonly used or 'hot types' of target

  objects..." and related text).

Claim 7:

Wu discloses a system, comprising

- a processor (processor 12) to find out a encoded type information in a first

  type checking for a class of an object, and performing a second type checking

  between the object class and a target class specified by the encoded type

  information to indicate by an indicator in a header of the object a result of the

  second type checking at the hotspot (see for example, Fig.1, element 12;

  also see, Fig.6, step 300, checking "Header Encoded w/Object Type" and

  related text; and

- a memory to save the target class (see for example, Fig.1, element 24,

  "System Memory" and related text),

but does not explicitly disclose find out a hotspot location of the encoded object

type information. However, Wu discloses a method to determinate if the type

information is encoded in object header or not by comparing the hashcode

portion of the object being type tested to a value or encoded condition associated

with an undefined condition (see for example, paragraph [0033]). Therefore, it

would have been obvious to one having ordinary skill in the art at the time the

invention was made to understand that location of determined encoded type

information in the object header is the hotspot and such hotspot/encoded data

specifying object type information as addressed by Wu (see for example,

paragraph [0033]).

Claim 8:

Wu discloses the system of claim 7, wherein the processor further to

- determine whether a third type checking between the object class and the

  target class is successful at the hotspot based on a logic value of the indicator

  (see for example, Fig.6, step 306, "Result=0?" -> Yes ->step 308, "Call Type

  Test Failure Routine" and related text; also see paragraph [0036], "If the

  processor 12 determines that the result of the logical ANDing is equal to zero

  (i.e., the object being type tested is not of the target type), the processor 12

  calls and executes type test failure or exception handling code (block 308),

which may operate in a manner similar to that depicted in Fig.2....”; also see,

Fig.2, step 100, “Object Type = Target Type?” ->No -> step 104 “Object Type

= Rot Type?” and related text)

Claim 9:

Wu discloses the system of claim 7, wherein the processor further to

- skipping a third type checking on the object class at the, in response to

  detecting that the indicator has a second logic value to indicator a failure of

  the second type checking (see for example, Fig.6, step 306, “Result=0?” ->

  Yes ->step 308, “Call Type Test Failure Routine” and related text; also see

  paragraph [0036], “If the processor 12 determines that the result of the logical

  ANDing is equal to zero (i.e., the object being type tested is not of the target

  type)...”; also see, Fig.2, step 100, “Object Type = Target Type?” ->No -> step

  104 “Object Type = Rot Type?” and related text).

Claim 10:

Wu discloses the system of claim 7, wherein the processor further to

- traverse a class hierarchy associated with the class of the object for the

  second type checking (see for example, Fig.2, step 100 -> Step 104 ->step

  108 ->step 100, traversing a class hierarchy to root class and checking root

  class type and related text).

Claim 11:

Wu discloses the system of claim 7, wherein the processor further to

- assert the indicator, in response to determining in the second type checking

  that the class of the object and the target class match a type checking

  condition (see for example, Fig.2, step 100, "Object Type = Target Type?" ->

  Yes -> step 102, "Return True to Calling Routine" and related text).

Claim 12:

Wu discloses the system of claim 7, wherein the processor further to

- return a signal indicating that the second type checking is successful, in

  response to determining that the class of the object and the target class

  match a predetermined criterion (see for example, Fig.6, step 310, "Return to

  Calling Routine" and related text).

Claim 13:

Wu discloses the system of claim 7, wherein the memory further to save a

beginning address of a handle of the target class, and wherein the processor

further to detect the hotspot by dynamic profiling (see for example, Fig.3 and

Fig.4, example code for executing by processor with memory, "Push

target_type", "Push obj", "call instanceof()", and related text; also see paragraph

[0030], "…the plurality of bit fields 202 defined in the header 200 correspond to

frequently or commonly used or 'hot types' of target objects…" and related text).

Claims 14-21:

Claims 14-21 are computer program products version of the claimed method, wherein all claimed limitation functions have been addressed in claims 1-13 above respectively. It is well known in the computer art that such method steps can be implemented as computer program and can be practiced and /or stored on a machine readable medium and executed by the system in claims 7-13. Thus, they also would have been obvious in view of reference teachings above. (see for example, p.5, right column, lines 7-27, "A machine readable medium" and related text).

Claims 22-29:

Claims 22-29 are system version for performing the claimed method as in claims 1 and 3-14 addressed above, wherein all claimed limitation functions have been addressed and/or set forth and certainly such system would need to run and/or practice such function steps disclosed by reference above (e.g., Wu's computer system has to comprise compiler, dynamic (just-in-time) compiler, loader and profiler to compile source code in Fig.3 and 4; to generate native code as in Fig.7 ; to load to execute and determine the "hot type"/frequency). Thus, they also would have been obvious in view of reference teachings above.

Conclusion

10.   The prior art made of record and not relied upon is considered pertinent to
applicant's disclosure.

11.   Applicant's arguments with respect to claims rejection have been considered but
are not persuasive. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP
§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in
37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE
MONTHS from the mailing date of this action. In the event a first reply is filed
within TWO MONTHS of the mailing date of this final action and the advisory
action is not mailed until after the end of the THREE-MONTH shortened statutory
period, then the shortened statutory period will expire on the date the advisory
action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be
calculated from the mailing date of the advisory action. In no event, however, will
the statutory period for reply expire later than SIX MONTHS from the mailing
date of this final action.

12.   Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Zheng Wei whose telephone number is (571)
270-1059 and Fax number is (571) 270-2059. The examiner can normally be
reached on Monday-Thursday 8:00-15:00.

        If attempts to reach the examiner by telephone are unsuccessful, the
examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The

fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571- 272-1000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Z. W./
Examiner, Art Unit 2192

/Tuan Q. Dam/
Supervisory Patent Examiner, Art Unit 2192